

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 57521

CSAH NO. 27

OVER THE

RED LAKE RIVER

DISTRICT 2 - PENNINGTON COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION
BY
COLLINS ENGINEERS, INC.
JOB NO. 3512

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 57521, Piers 1 and 2, were found to be in good condition with no defects of structural significance observed. Piers 1 and 2 exhibited the presence of light and moderate accumulations of timber debris, respectively, around the upstream piles. The channel bottom inspected around the substructure units appeared to be in stable condition with no evidence of significant scour.

INSPECTION FINDINGS:

- (A) Around the upstream piles of Piers 1 and 2, there were light and moderate accumulations of timber debris, respectively. Each accumulation was primarily located at the upstream two piles of the pier, extended from the waterline to the channel bottom, and mainly consisted of 3 inch diameter or smaller timber debris along with aquatic vegetation.

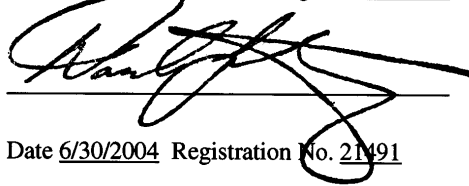
RECOMMENDATIONS:

- (A) Monitor the timber debris accumulation at both piers, and if found to be increasing in the future, removal operations may become warranted.

- (B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

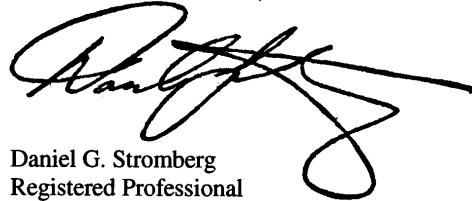
Daniel G. Stromberg

A handwritten signature in black ink, appearing to read 'Dan G. Stromberg', written over a horizontal line.

Date 6/30/2004 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

A handwritten signature in black ink, appearing to read 'Dan G. Stromberg', written over a horizontal line.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 57521

Feature Crossed: The Red Lake River

Feature Carried: CSAH No. 27

Location: District 2 - Pennington County

Bridge Description: The superstructure consists of a three span, reinforced concrete slab.
The superstructure is supported by two concrete abutments and two steel H-pile bent piers, numbered 1 and 2 starting from the south.

2. INSPECTION DATA

Professional Engineer/Diver: Daniel G. Stromberg, P.E., No. 21491

Dive Team: Michelle D. Koerbel, Matt J. Lengyel.

Date: August 26, 2002

Weather Conditions: Cloudy, " 60E F

Underwater Visibility: " 3 Feet

Waterway Velocity: " 2.5 f.p.s.

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2

General Shape: The piers consist of a single row of eight steel H-piles, each encased in a 16 inch diameter steel shell, supporting a reinforced concrete cap.

Maximum Water Depth at Substructure Inspected: Approximately 5.2 Feet.

4. WATERLINE DATUM

Water Level Reference: The top of the parapet at the west end of Pier 1.

Water Surface: The waterline was approximately 15.5 feet below reference.
Waterline Elevation = 1157.7

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 8

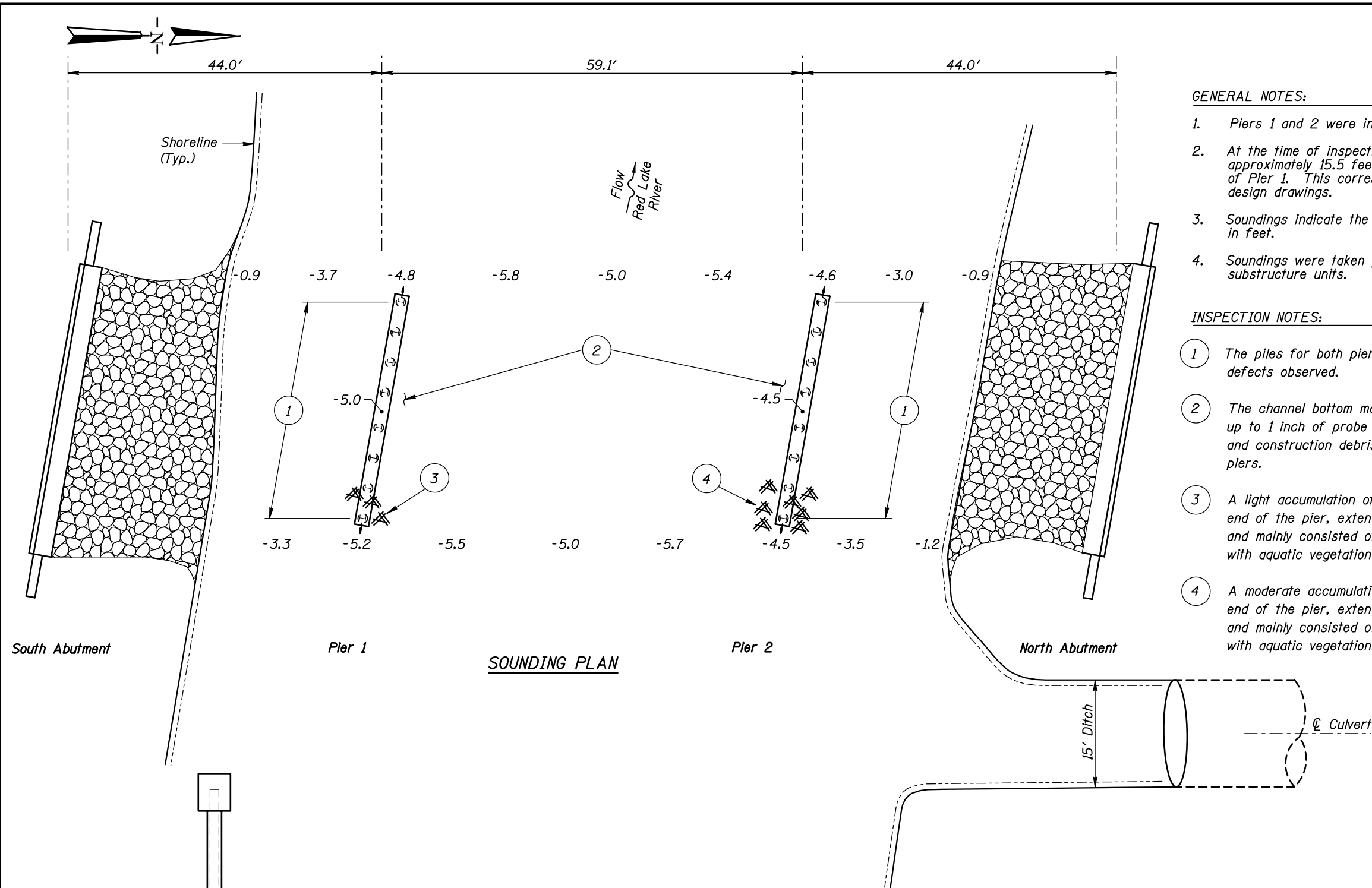
Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/8/02

Item 113: Scour Critical Bridges: Code F/02

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____ Yes X No



GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on August 26, 2002, the waterline was located approximately 15.5 feet below the top of the parapet at the downstream end of Pier 1. This corresponds with a waterline elevation of 1157.7 based on design drawings.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

1. The piles for both piers were in good condition with no significant defects observed.
2. The channel bottom material consisted of firm sand and gravel with up to 1 inch of probe rod penetration. There was also scattered riprap and construction debris observed around the upstream piles for both piers.
3. A light accumulation of timber debris was observed at the upstream end of the pier, extended from the waterline to the channel bottom, and mainly consisted of 3 inch diameter or smaller branches along with aquatic vegetation.
4. A moderate accumulation of timber debris was observed at the upstream end of the pier, extended from the waterline to the channel bottom, and mainly consisted of 3 inch diameter or smaller branches along with aquatic vegetation.

TYPICAL END VIEW OF PIERS

Legend

- 4.1 Sounding Depth from Waterline (8/26/02)
- Steel H-pile with 16" ϕ Shell
- Battered Steel H-pile with 16" ϕ Shell
- Timber Debris
- 6" to 3' ϕ Riprap

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION

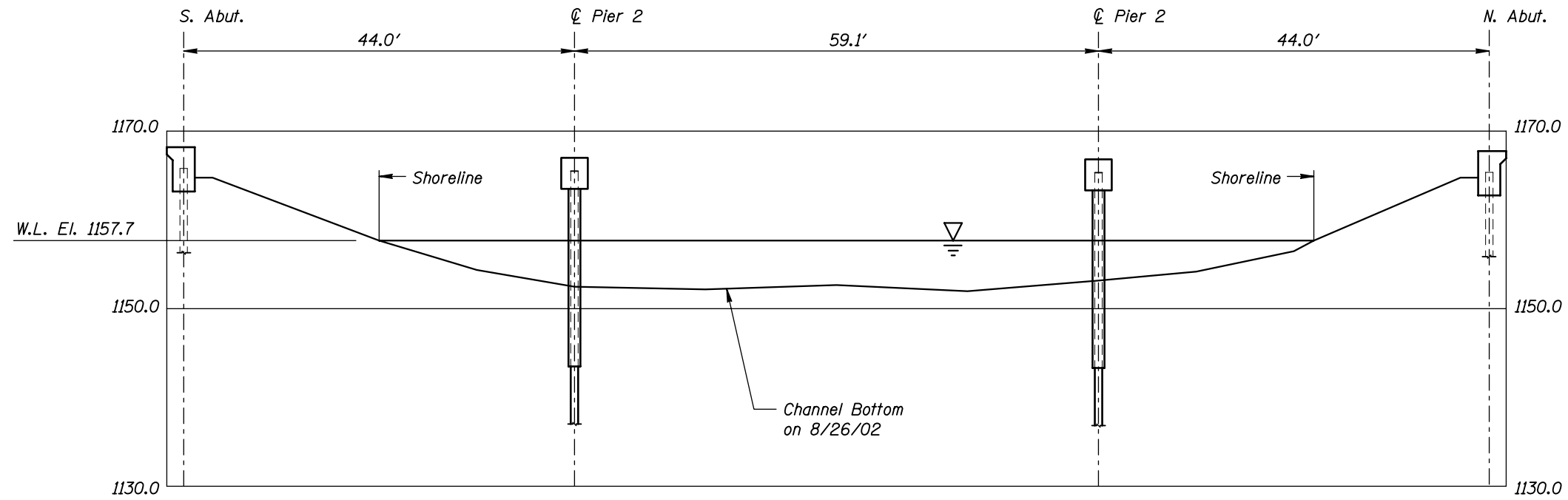
STRUCTURE NO. 5752I
OVER THE RED LAKE RIVER
DISTRICT 2, PENNINGTON COUNTY

INSPECTION AND SOUNDING PLAN

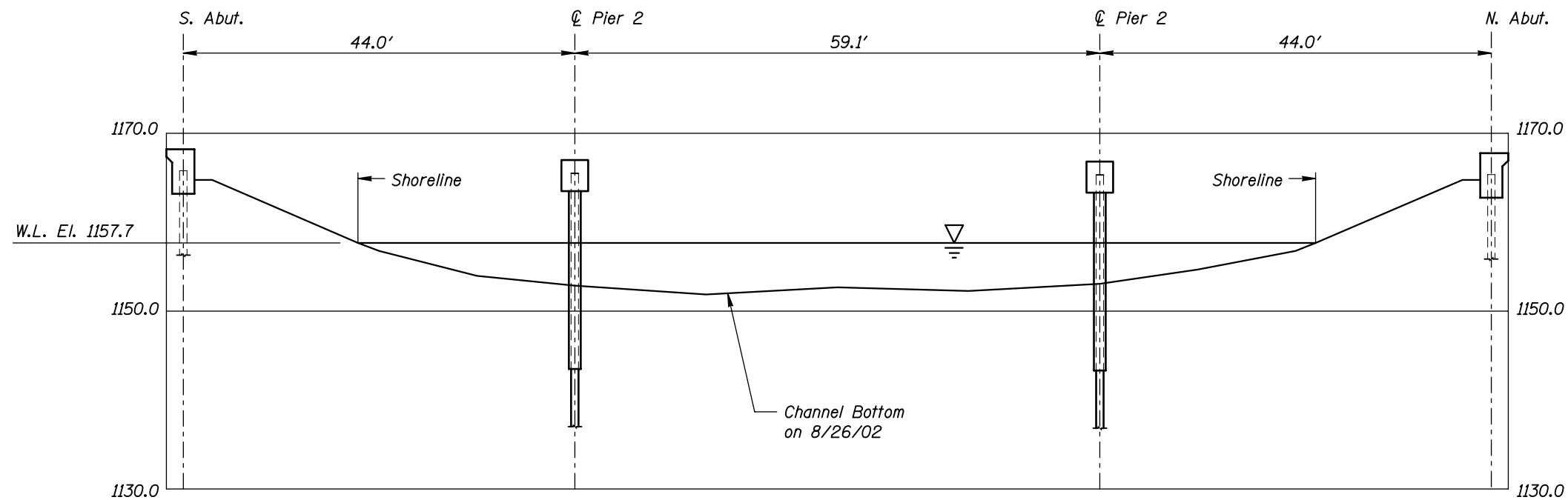
Drawn By: PRH
Checked By: MDK
Code: 35125752I

COLLINS ENGINEERS, INC.
300 W. WASHINGTON, STE. 600
CHICAGO, ILLINOIS 60606
(312) 704-9300

Date: AUG. 2002
Scale: NTS
Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

**MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION**

STRUCTURE NO. 5752I
OVER THE RED LAKE RIVER
DISTRICT 2, PENNINGTON COUNTY
**UPSTREAM AND DOWNSTREAM
FASCIA PROFILES**

Drawn By: PRH
Checked By: MDK
Code: 35I25752I



COLLINS ENGINEERS, INC.
300 W. WASHINGTON, STE. 600
CHICAGO, ILLINOIS 60606
(312) 704-9300

Date: AUG. 2002
Scale: 1/16"=1'
Figure No.: 2



Photograph 1. Overall View of the Structure, Looking Northwest.



Photograph 2. View of Pier 1, Looking Southeast.



Photograph 3. View of Pier 2, Looking Southwest. Note the Accumulation of Timber Debris and Aquatic Vegetation at the Upstream Nose of the Pier.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc.

DATE: August 26, 2002

ON-SITE TEAM LEADER: Daniel G. Stromberg, P.E.

BRIDGE NO: 57521

WEATHER: Cloudy, " 65E F

WATERWAY CROSSED: Red Lake River

DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
OTHER

PERSONNEL: Michelle D. Koerbel, Matt J. Lengyel

EQUIPMENT: Scuba, U/W Light, Scraper, Sounding Pole, Lead Line, Probe Rod, Camera

TIME IN WATER: 9:00 a.m.

TIME OUT OF WATER: 9:30 a.m.

WATERWAY DATA: VELOCITY " 2.5 f.p.s.

VISIBILITY " 3 feet

DEPTH 5.2 feet maximum at Pier 1

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Piers 1 and 2 were found to be in good condition below water with no defects of structural significance observed. Around the upstream piles at Piers 1 and 2, there were light and moderate accumulations of timber debris, respectively. The channel bottom inspected around the substructure units appeared to be in stable condition with no evidence of significant scour.

FURTHER ACTION NEEDED: X YES NO

Monitor the timber debris accumulation at both piers, and if found to be increasing in the future, repair operations may become warranted.

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 57521
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., No. 21491
WATERWAY CROSSED The Red Lake River

INSPECTION DATE August 26, 2002
NOTE: USE ALL APPLICABLE CONDITION
DEFINITIONS AS DEFINED IN THE MINNESOTA
RECORDING AND CODING GUIDE INCLUDING
GENERAL, SUBSTRUCTURE, CHANNEL AND
PROTECTION, AND CULVERTS AND WALL
DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	SUBSTRUCTURE						CHANNEL					GENERAL					
			PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	5.2'	8	N	N	9	N	8	8	N	N	7	7	N	8	N	N	N	N
	Pier 2	4.6'	8	N	N	9	N	8	8	N	N	6	6	N	8	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Piers 1 and 2 were found to be in good condition below water with no defects of structural significance observed. Around the upstream piles at Piers 1 and 2, there were light and moderate accumulations of timber debris, respectively. The channel bottom inspected around the substructure units appeared to be in stable condition with no evidence of significant scour.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.